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(71) Applicant(s)
Elkapsling AB

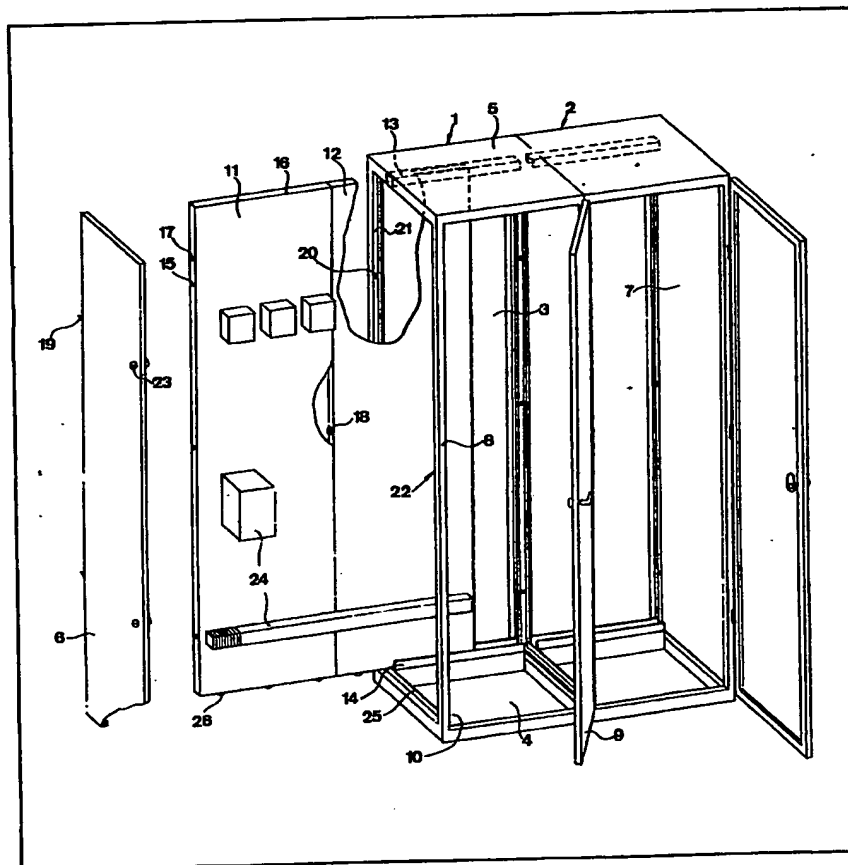
Box 18
S-840 20 Ange.
Sweden

(72) Inventor(s)
SÖLVE SJÖRDIN

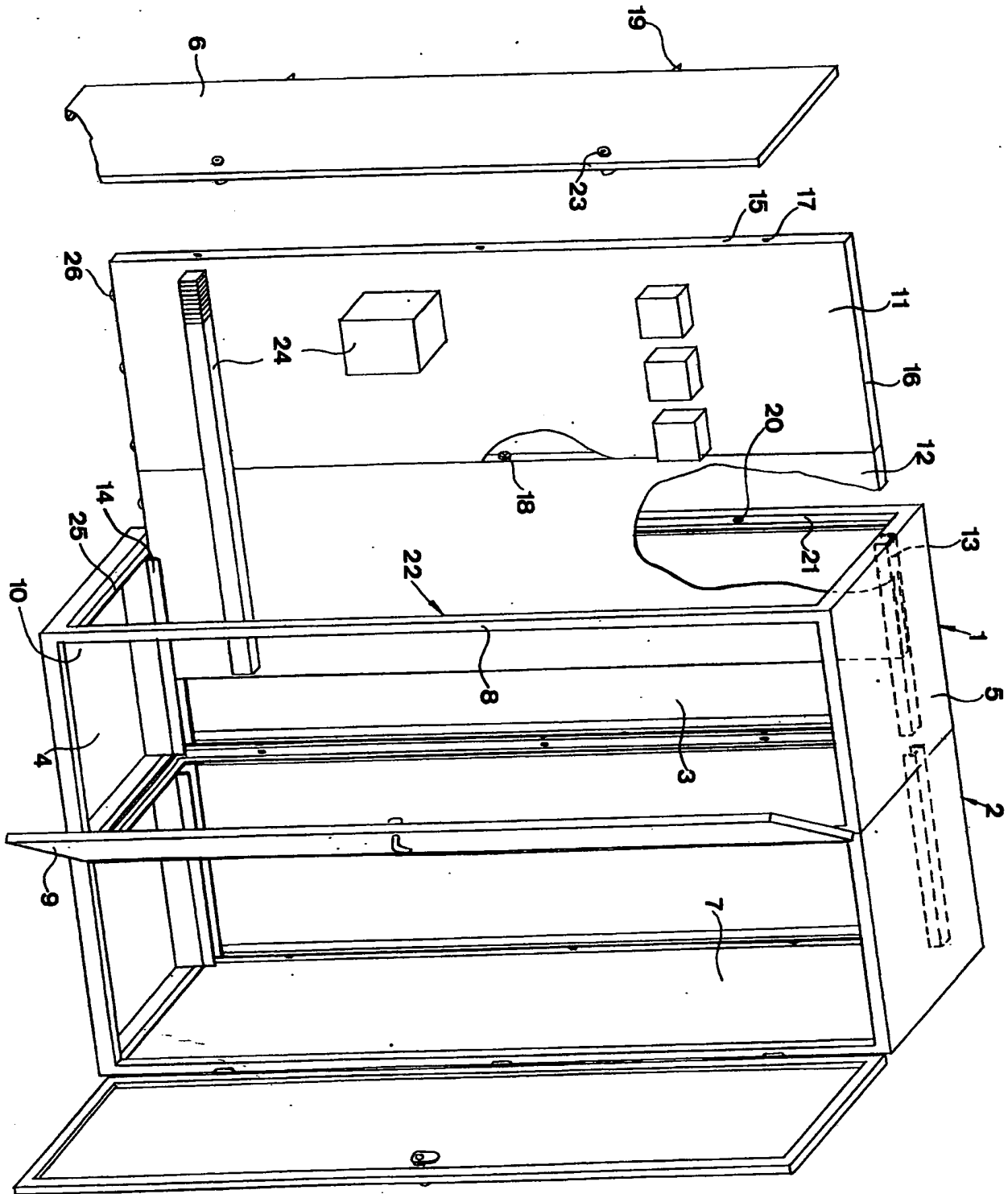
(74) Agents
Barlow, Gillett &
Percival

(54) Cabinet

(57) The invention relates to a cabinet 1 of the type comprising a plate 11 for mounting electrical installation components 24. In previously known cabinets the installer has had to move between uncomfortable postures and further the mounting plates have been comparatively narrow due to the fact that the plates have been removed and inserted through the shutter opening 10 of the cabinet. The cabinet of the invention eliminates these inconveniences by the fact that the mounting plate 11 is made movable out of and into the cabinet respectively through an opening, the plane of which extends substantially at right angles to the plane of said shutter opening 10. The further opening is provided by removing a side panel 6 of the cabinet.



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SPECIFICATION

Cabinet

5 This invention relates to a cabinet of the type comprising at least one plate for mounting preferably electrical installation components, said plate being, when erected, accessible from outside the cabinet through an opening
10 which is situated at the front of the cabinet and may be closed by means of a door or shutter, said plate also being movable out of the cabinet so as to facilitate the mounting of said components thereon. In practice said
15 installation components may consist of a large number of various components and accessories, such as couplings, relays, plinths, safety devices, conductors, bus bars, disconnectors and so on. An important requirement in connection with such cabinets is that they should be tight so that dust, vapour or other pollutions occurring in the air are prevented from contacting the components in the cabinet. To this end the cabinets are constructed by a
25 generally parallel-epipedically shaped framework comprising a back piece, a bottom piece, a top piece, two side pieces as well as a front in which the above-mentioned opening with the shutter is disposed. All of these cabinet pieces except for the shutter are connected hermetically tightly to each other or to the framework and by arranging suitable sealing strips for the shutter, the structure can fulfil even very high requirements for close-
35 ness. The mounting plate previously mentioned is usually fixed by means of bolts or screws, either in the vicinity of the back piece of the cabinet or alternatively somewhere between the back piece and the front, with the
40 plane of the plate substantially parallel to the plane of the back piece and the front respectively. The removal of the plate after disconnecting the bolts or screws is effected through the shutter opening, the plate being lifted or
45 tilted therethrough.

Originally the electric installation cabinets of the above-mentioned type were made with side pieces which were permanently and rigidly attached to the framework. In the last few
50 years with the increased demands for automation with the ensuing electrification, a need has however arisen to assemble two or more small cabinets into a larger unit or central assembly. In order to save material and labour, chiefly in connection with the wiring between the components in the various cabinets, one has got the idea of securing the
55 side pieces detachably to the framework in order to obtain the assemblage of two or more cabinets possible, after removal of the two opposed side pieces of adjacent cabinets, so as to form a larger cabinet unit enclosing one single continuous space. In this space the wiring between components mounted on different mounting plates can be carried out

using a minimum of wiring material and with a rather limited labour.

Irrespective of the question whether the cabinet has permanent or detachable side pieces, the removal and the insertion of the mounting plate have hitherto always been effected through the shutter opening. This is due to the fact that all cabinets previously known have a framework structure which, even if the side pieces are removable, is not adapted for handling the mounting plate otherwise than just through the shutter opening. To remove and insert the plate through the shutter opening in this manner has however proved to be associated with rather serious inconveniences. Thus, this means that the mounting plates in the different cabinets, which per se are assembled into a continuous unit, still consist of parts being separated from each other. Hence it follows that the work of mounting or fitting up, that is the work of mounting the installation components on the plates, in many cases may be extremely troublesome and time-consuming in spite of the fact that the plates are removable. Thus, if long installation components of various kinds, such as bus bars, are to be mounted extending between two or more different mounting plates, the mounting compulsorily has to be done after the plates have been put in place within the cabinets. This work is complicated to a high degree by the framework uprights enclosing the shutter openings and therefore the installer will have to move between very uncomfortable postures to be able to perform the work at all. Another inconvenience is the fact that the size of the shutter opening settles the maximum width of the mounting plate. Since the uprights enclosing the shutter opening for strength reasons have to be of a fairly large size or width, this means that the mounting plate, when erected within the cabinet, is in no way capable of filling out and utilizing the whole width of the cabinet. In practice, each of the two uprights of for instance a cabinet having a width of approximately 500 mm, may have a width of 40 to 50 mm which means that the plate can be made with a width of 400 to 420 mm at a maximum. The result is that the plate utilizes merely about 80% of the width space occupied by the cabinet.

The object of the present invention is to eliminate the above-mentioned inconveniences of electric installation cabinets previously known and provide a cabinet which by simple means renders an easy and rational work of mounting possible. In a manner as simple as ingenious this is achieved by the fact that the mounting plate is movable out of and into the cabinet respectively through an opening the plane of which extends at an angle to the plane of the shutter opening. Preferably the plane of said special opening extends at right angles to the plane of the shutter opening. In

this way the width of the mounting plate may be made equal to the width of the cabinet itself; that is equal to the distance between the two side pieces of the cabinet. Thus,

5 when the mounting is to be performed, all plates included in a cabinet unit may be removed and interconnected into one single continuous plate unit on which all mounting operations may be effected before the plate unit is inserted in the cabinet unit.

10 With reference to the attached drawing a closer description of an embodiment of the invention will follow hereinafter. In the drawing two cabinets assembled to a unit are illustrated in a perspective view, two mounting plates interconnected into a plate unit being shown partly withdrawn out of the cabinet unit. Moreover, a detached side piece is illustrated in perspective view.

20 The two individual cabinets 1 and 2 which jointly form a unit and which are identical in structure, each comprises in a conventional manner a back piece 3, a bottom piece 4, a top 5, two side pieces 6 and 7 as well as a front 8 in which an opening 10 is provided. Said opening may be closed by means of a shutter or door 9. This is the structure or condition of the cabinets when they are furnished separately. In the example shown the

30 two cabinets are illustrated in an interconnected condition. Hence it follows that the right side piece of cabinet 1 as well as the left side piece of cabinet 2 are missing in the drawing.

35 Originally, each cabinet 1, 2 comprises a mounting plate 11 and 12 respectively, the height of which substantially corresponds to the height of the cabinets and the width of which, in accordance with a feature of the invention, is substantially equal to the maximum width of the cabinets.

For guiding each mounting plate there is in the individual cabinet two opposite guides engaging two opposite edge portions of the plate. In the embodiment shown, said guides consist of channels or U-beams 13 and 14 the first one of which is fixed on the lower side of the top piece 5, with the shanks of the U directed downwards, while the other one is fixed on the bottom piece 4, with the shanks of the U directed upwards. Though U-beams are exemplified as guides it is evident that other kinds of guides may be used as well, such as rails engaging groove like recesses in the edge portions of the plate.

55 In order to facilitate the relative movement between the plate and the guides, roller means such as pulleys 26 may be disposed at least in the bottom edge of the plate so as to roll against the bottom flange of U-beam 14. Analogous roller means may also be disposed at the top edge of the plate.

60 In this case each mounting plate 11, 12 comprises four flanges 15, 16 projecting substantially at right angles to the plane of the

plate, two of said flanges (namely flanges 15) extending along the long side edges of the plate, while the other two (flanges 16) extend along the short side edges of the plate. In the longitudinal flanges 15 holes 17 are pre-bored at certain locations along the flanges. These holes are utilized for joining the plates in question. As indicated in the drawing such joining is effected by means of fastening elements in the form of bolts and nuts 18.

75 The detachable side pieces of the cabinet (see side piece 6) comprises a plate or panel suitably formed with reinforcing flanges, said panel presenting at one longitudinal edge thereof locking tabs 19 which may be inserted into narrow slots 20 recessed in a corner upright 21 of the framework 22 on which the cabinet is constructed, said tabs locking said edge of the side piece relative to the framework. For locking the opposite edge of the side piece there are locking means 23, preferably in the shape of quick coupling means of a known or arbitrary type. These locking means can be disposed either on the side piece as illustrated in the drawing or on the framework 22.

80 In the drawing reference numeral 24 designates a number of installation components which have been mounted on the two mounting plates 11, 12. In particular it should be noted that certain components are long and extend over both plates.

95 The plates as well as all of the cabinet pieces (back piece, top piece, bottom piece, side pieces, shutter piece) are preferably made of pressed metal sheet using conventional pressing technique.

100 It should be noted that the detachable side pieces abut and cooperate with special sealing strips 25 ensuring a tight seal of the cabinets in question. Similarly, also the shutters 9 cooperate with suitable sealings.

105 The cabinet described is used in the following manner. From the manufacturer the two cabinets 1 and 2 are delivered separately with the side pieces in place and with a mounting plate within the cabinet.

110 When need arises to assemble the two cabinets to a larger continuous unit, the two side pieces of cabinet 1 as well as one side piece of cabinet 2 are detached. The two mounting plates 11, 12 are removed from the cabinets. The cabinet housing may now be interconnected in a suitable manner, for instance by means of screws applied in the framework.

115 Also the two mounting plates 11, 12 are interconnected by means of the fastening elements 18 or in another suitable manner. The two plates now form a continuous unit on which the various components 24 may be mounted in a comfortable, easy and time-saving manner.

120 When the mounting of components 24 has been accomplished and when the necessary

interconnections have been made, the plate unit is put into the cabinet unit by being inserted into and guided by the guides 13, 14. Hereafter the connection of the various components can be accomplished.

When the plate unit has been put in place, one of the detached side pieces, in this case side piece 6, is attached to the side of the cabinet 1 shown to the left in the drawings, and thereafter the cabinet unit is ready to be used.

If a large number of mounting plates are interconnected into a unit it is evident that a comparatively large space is required next to the cabinet unit in order to permit the plate unit to be inserted into the cabinet unit. If however, this available space is small, one can proceed in such a way that the plates are first interconnected into a unit, and thereafter the individual cabinet casings are passed onto the plate unit one by one from the flank thereof. Hereby the requirements for available space are reduced to a space being equal to the width of one single cabinet casing only.

The advantages of the invention are evident inasmuch as it permits a quick and rational mounting of all types of installation components at the same time as the mounting plates in question may be given a maximum width, which in turn means an optimal utilization of the space capacity of the cabinets.

Of course the invention is not merely limited to the embodiment described above and shown in the drawing. Thus, instead of removing the mounting plate laterally from the cabinet it is conceivable to construct the cabinet in such a manner that the plate may be removed in a vertical direction, that is through an opening either at the bottom of the cabinet or at the top thereof. This embodiment may be particularly advantageous in connection with wall cabinets in contrast to the standing cabinets shown in the drawings. Of course it is possible to use the cabinet of the invention for mounting other installation components than electrical components only, such as pneumatic, hydraulic, electronic components. Other modifications of the invention are conceivable too within the scope of the following claims.

CLAIMS

1. Cabinet comprising at least one plate (11) for mounting installation components (24), said plate being, when erected, accessible from outside the cabinet through an opening (10), which is situated at the front of the cabinet and may be closed by means of a shutter (9), said plate also being movable within the cabinet so as to facilitate the mounting of said components thereon, at least one of two cabinet parts (6, 7) extending backwards from the front (8) to a back (3) being detachably secured to the cabinet in order to enable assembly of two or more cabinets, said

cabinets together forming a cabinet unit confining a common space, characterized in that said mounting plate (11) is movable out of and into the cabinet respectively through an opening, the plane of which extends at an angle to the plane of said shutter opening (10).

2. Cabinet according to claim 1, wherein the opening for the mounting plate (11) is arranged in a cabinet side extending substantially at right angles to the front (8).

3. Cabinet according to claim 1 or 2, wherein the width of the mounting plate (11) is substantially equal to the width of the cabinet, that is equal to the distance between two cabinet side pieces.

4. Cabinet according to anyone of the preceding claims, wherein the mounting plate (11) is guided by two opposite guides (13, 14) mounted within the cabinet, two opposite edge portions of the plate engaging said guides.

5. Cabinet according to claims 2 and 4, wherein one (14) of said guides is located at the bottom (4) of the cabinet while the other one (13) is located at the top (5) thereof.

6. Cabinet according to claim 4 or 5, wherein the mounting plate (11) and/or the guides (13, 14) have roller means (26) for facilitating the relative movement between the plate and the cabinet.

7. Cabinet according to anyone of the preceding claims, wherein the mounting plate (11) comprises a number of flanges (15, 16) which project substantially at right angles to the plane of the plate and which are arranged to facilitate joining of two or more plates (11, 12) to a continuous plate assembly which is common to the whole cabinet unit (1, 2).

8. Cabinet according to claim 7, wherein the flanges (15), at predetermined locations, have pre-bored holes (17) for fastening elements (18).

9. A cabinet substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.